PROJECT FINANCE FOR RENEWABLE ENERGY SYSTEMS

Egypt case study
Risk Analysis and mitigation measures in the existing policy and regulatory framework

November 2018
About RES4MED & Africa

Renewable Energy Solutions for the Mediterranean & Africa
RES4MED&Africa

Who we are: RES4MED&Africa promotes the deployment of large-scale and decentralized renewable energy and energy efficiency in Southern-Mediterranean and Sub-Saharan African countries to meet local energy needs. Since its inception in 2012, the association gathers the perspectives and expertise of a member network from across the sustainable energy value chain.

Our work: RES4MED&Africa functions as a platform for members and partners of emerging markets to foster dialogue and partnerships, share knowledge and build capacity to advance sustainable energy investments in Southern-Mediterranean and Sub-Saharan African countries.

Our mission: RES4MED&Africa aims to create an enabling environment for renewable energy and energy efficiency investments in emerging markets through 3 work streams:

- Acting as a connecting platform for dialogue & strategic partnerships between members and partners to exchange perspectives and foster cooperation;

- Providing technical support & market intelligence through dedicated studies and recommendations based on members’ know-how to advance sustainable energy markets;

- Leading capacity building & training efforts based on members’ expertise to enable skills and knowledge transfer that supports long-term sustainable energy market creation;

At the end of 2015, RES4MED members decided to expand the geographic focus to Sub-Saharan Africa in light of the huge potentials and growth opportunities for Africa’s renewable energy sector.

Members: RES4MED&Africa gathers a network of 38+ members from across the sustainable energy value chain including industries, agencies, utilities, manufacturers, financing institutions, consultancies, legal and technical services providers, research institutes, and academia.

Partners: RES4MED&Africa works with local, regional and international partners, agencies and organizations to pursue its mission and promote renewable energy and energy efficiency deployment in the region of focus.
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Executive Summary

With a population of about 97.5 million inhabitants, Egypt is one of the biggest and more relevant country in the Mediterranean area, ranked among the biggest developing economies of the African continent. Despite that, in the last years a combination of factors caused a slowdown in growth, which affected the Gross Domestic Product (GDP), attested around 235.37 billion US dollars in 2017, 29% lower than the former year, and inflation, increased by 27% in six months from January 2018.

Following the development and the demographic growth, the energy demand has raised, almost doubling in the last 10 years, boosting the installed capacity up to 45 GW, out of which fossil fuels represent 92% while renewable energies without hydropower only 2% (887 MW). A same scenario is portrayed in the generation mix, where renewables without hydro, even if they benefit from a dispatch priority, contribute for almost 1.5% in the electricity production. Nonetheless, thanks to the high resources in terms of wind and solar, the renewable energy sources (RES) represent a great potential in Egypt with an estimation up to 30 GW for wind and 50 GW for solar energy.

Since January 2013, an ever-growing commitment from the government has been demonstrated in promoting RES integration with a set of ambitious targets fixed through the Integrated Sustainable Energy Strategy (ISES) aiming at producing 20% of electricity from RES by 2022 and 42% by 2035. In the interests of laying the foundation for a blooming and competitive renewables market, several measures have been taken to adapt the policies and regulations framework in force and provide a clearer role of the public entities acting within the sector governance.

The Egyptian government provides the investors in renewable energy with a variety of procurements and supporting schemes, from EPC to BOO\(^\text{I}\), IPP\(^\text{II}\), FIT\(^\text{III}\) and Net metering. All these forms of contract are essential to develop projects, establishing a clear partnership between private and public sector, providing transparent agreements and laying the fundamentals for mitigating the typical risks associated with investments in RES. From the market experts stand point the application of these contracts resulted in a discrete success but with room for improvement.

Independently from the specific country, investments in RES are exposed to a certain level of risk, which depends on the specificity of the technology as well as the general business framework and regulations of the targeted market. Back in 2016 a survey conducted by RES4MED and PwC\(^\text{IV}\) outlined that the overall perception of the investment risks in Egypt – spanning from legal and social ones to financial ones - tended to be medium-high, mainly due to those risks affecting project revenues and financial structuring. The high level of vulnerability and unpredictability that the Egyptian economy is experiencing today is among the main causes of investors’ concerns about the entry in the local RES market.

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\(^{I}\) Engineering Procurement and Construction

\(^{II}\) Build-Own-Operate

\(^{III}\) Independent Power Producers

\(^{IV}\) Feed in Tariffs

\(^{V}\) RES4MED and PwC, “Survey on the main barriers affecting investments in RE capacity in the Mediterranean Focus on Southern and Eastern Mediterranean Countries (SEMCs)” RES4MED, 2016
In the last years the Egyptian government has undertaken a wide and positive reform program with the purpose of mitigating the perceived risks and attracting investors in RES, confirming its willingness in expanding the national renewable energy market also in the light of meeting the targets at 2022 and 2035. Since 2016, most of the barriers spotted by renewable investors has been addressed, intervening both on the stability and clarity of the regulatory framework and on the improvement of macro-economic situation. Those mitigation measures are essential to foster the “bankability” of the projects, allowing investors to properly allocate the risks associated with the construction phase (or pre-completion phase) and the operation phase (or post-completion phase). Risk-sharing agreements between parties, such as PPAs, are necessary in order to reduce over-exposure and clarify responsibilities of each involved party.

In order to reduce the various risks perceived which correspond in barriers for the investors, Egypt has to move from a first phase of reforming the overall investment framework for renewable energy to a second phase of application and improvement of that framework thus assuring a clear and effective regulatory framework, the availability of public finance instruments, an incentivising market and the access to contractual guarantees. Those are the key drivers to attract investors in the country and create the basis for a competitive market, lowering the levelised cost of energy.

Standardize the PPA contracts with a certainty on the power purchasing price, improve the guarantees coming from banks and the security of agreements, assure more convenient currency convertibility terms, allow easier cross border financial flows, establish provision of government guarantees, increase the availability of government financial resources, open up the capital markets. All those aspects, together with a more stable monetary policy from the Central Bank, become a must-have to increase the appetite on investments in RES in the Egypt.

ACKNOWLEDGMENT

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Egypt energy sector

1. Egypt energy landscape

Egypt is a North African country with a population of about 97.5 million inhabitants in 2017. In the same year, its Gross Domestic Product (GDP) was about 235.37 billion US dollars, 29% lower than the one registered in former year, resulting in a GDP per capita of 2785.37 US dollars in 2017. This data should be seen in the light of a precarious economy stability that affected the country in the last years and compromises the inflation rate, which has been recorded 17.1% in January 2018, 27% higher than in July 2018.

In terms of energy sector, in 2016 the entire population of Egypt was successfully reached by the electric service, meeting the target of 100% electricity access in the country. The total installed capacity in the year 2016/2017, as Figure 1 illustrates, accounted for 45 GW, 15.8% higher than 2016 and 66.4% higher than 2011.

![Figure 1: Evolution of Installed Capacity (GW)](http://www.moee.gov.eg/english_new/EEHC_Rep/2016-2017en.pdf)

The annual growth rate of installed capacity exploded in the last year, doubling his value form an average rate of around 7.5% in the timeframe from 2011 to 2016 to a 15.8% in 2017. Table 1 shows that, to date, the highest installed capacity comes from steam power plants (15.5 GW), followed by CCGTs (13.3 GW), OCGTs (12.5 GW) and hydropower plants (2.8 GW).

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1 Worldometers «www.worldometers.info»
2 Trading Economics «www.tradingeconomics.com»
3 Trading Economics «www.tradingeconomics.com»
4 Central Bank of Egypt «www.cbe.org.eg»
6 Data from 30/06/2016 to 30/06/2017
After many years of lack of investments in expanding renewable energy production, in 2015 the total installed capacity reached 887 MW, 200 MW higher than 2014, pointing out an increased attractiveness of the market in Egypt and a moderate improvement of existing supporting schemes.

Fossil fuels (oil and natural gas) have always played a major role in the electricity generation mix, as a direct consequence of the country natural resources, since Egypt is both the largest non-OPEC oil producer and the second largest producer of natural gas in Africa. Thereby, the share of oil and natural gas in the current electricity generation mix reaches almost 92%, while hydro power, wind and solar power plant contribute respectively for 6.8%, 1.2% and 0.3%, as Figure 2 illustrates.

### Table 1: Evolution of Installed Capacity by technology (MW)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas (OCGT)</td>
<td>1376</td>
<td>2826</td>
<td>3428</td>
<td>3415</td>
<td>4874</td>
<td>7845</td>
<td>13345</td>
</tr>
<tr>
<td>Combined Cycle (CCGT)</td>
<td>9327</td>
<td>10077</td>
<td>10080</td>
<td>11330</td>
<td>11777</td>
<td>12527</td>
<td>12527</td>
</tr>
<tr>
<td>Thermal steam</td>
<td>12859</td>
<td>12684</td>
<td>13808</td>
<td>13783</td>
<td>15082</td>
<td>14798</td>
<td>15449</td>
</tr>
<tr>
<td>Hydropower</td>
<td>2800</td>
<td>2800</td>
<td>2800</td>
<td>2800</td>
<td>2800</td>
<td>2800</td>
<td>2800</td>
</tr>
<tr>
<td>Renewables (w/o hydro)</td>
<td>687</td>
<td>687</td>
<td>687</td>
<td>687</td>
<td>687</td>
<td>687</td>
<td>687</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>27049</strong></td>
<td><strong>29074</strong></td>
<td><strong>30803</strong></td>
<td><strong>32015</strong></td>
<td><strong>35220</strong></td>
<td><strong>38857</strong></td>
<td><strong>45008</strong></td>
</tr>
</tbody>
</table>

Source: EEHC, 2018

### Figure 2: Electricity Generation by technology in 2016/2017 (%)

Source: EEHC, 2018
The bulk of the electric service is covered by thermal steam plants (40.7%) and CCGTs (39.2%), producing respectively 77 TWh and 74 TWh on a total generation of 189.5 TWh, as Table 2 shows.

<table>
<thead>
<tr>
<th>TYPE OF POWER</th>
<th>2016/2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas (OCGT)</td>
<td>22444</td>
</tr>
<tr>
<td>Combined Cycle (CCGT)</td>
<td>74240</td>
</tr>
<tr>
<td>Thermal steam</td>
<td>77078</td>
</tr>
<tr>
<td>Hydropower</td>
<td>12850</td>
</tr>
<tr>
<td>Wind</td>
<td>2200</td>
</tr>
<tr>
<td>Solar PV &amp; Solar Thermal</td>
<td>580</td>
</tr>
<tr>
<td><strong>TOTAL GRID</strong></td>
<td><strong>189392</strong></td>
</tr>
<tr>
<td>IPPs &amp; Isolated Plants</td>
<td>158</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td><strong>189550</strong></td>
</tr>
</tbody>
</table>

Table 2: Electricity Generation by technology in 2016/2017 (GWh)
Source: EEHC, 2018

Although a current limited share in the energy mix, renewable energy sources have a great potential in Egypt. Its geographical position and climatic conditions permit a potential wind capacity up to 30 GW and 50 GW of solar installed capacity. It has been estimated that winds speed can reach 10.5 m/s at 50 meter of altitude and that the yearly sun radiation, available for an average of 10 hours per day, accounts for 2000-3000 kWh/m².8

Today, Egypt is facing the implications of the excessive resilience on carbon-based primary fuels, first of all the local air pollution and CO₂ emissions that reached 199.57 million of tons⁹ in 2015, equivalent to yearly 2.13 tons per capita. Moreover, the electricity demand is growing fast in Egypt, resulting 1.74 MWh per capita in 2015 (81% higher than it was in 2000), driven by rapid urbanization and economic growth, while local energy mineral reserves are slowly extinguishing. To ensure energy supply security and limit environmental impact risks the country has adjusted the governance of the sector and adopted several measures to facilitate the integration of renewable energies, that will be the focus of the next chapters.

2. Policy and regulatory framework

The first time Egypt showed an interest in renewable energies was in 1982, when it was planned to reach by 2000 the target of 5% of electricity generated from RES. Subsequently, the New National Renewable Energy Strategy was announced in 2008, mainly in response to an energy supply emergency that occurred the former year, targeting to produce 20% of the total electricity from renewables by 2022. Notwithstanding the evident commitment of the government to lay the foundation for a RES market in the country, Egypt was not able to meet the proposed targets, due to a combination of high costs of technology, heavily subsidised energy prices, economic uncertainty and political instabilities¹⁰.

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⁹ IEA Database
¹⁰ IRENA, 2018, Egypt Energy Outlook
A major commitment of the government arrived in January 2013, with the support and funding of the European Union, when the Integrated Sustainable Energy Strategy (ISES) has been launched. The programme, that is estimated to cost over 70 billion US dollars, defines necessary and practical measures to meet the high-level main goals of: security of supply, sustainability and effective governance, as it is illustrated in Figure 3.

Figure 3: ISES goals and measures
Source: MOEE (2015)\textsuperscript{11}

Different energy sector scenarios have been outlined within ISES, highlighting for each one a specific set of targets, of which the most ambitious one can be synthetized as in the following Table 3.

<table>
<thead>
<tr>
<th>Targets</th>
<th>By 2022</th>
<th>By 2025</th>
<th>By 2030</th>
<th>By 2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable Energy</td>
<td>20% electricity generation</td>
<td>-</td>
<td>-</td>
<td>42% electricity generation</td>
</tr>
<tr>
<td>Oil products and Gas</td>
<td>-</td>
<td>-</td>
<td>49% of installed capacity</td>
<td>-</td>
</tr>
<tr>
<td>Coal</td>
<td>-</td>
<td>-</td>
<td>15% electricity generation</td>
<td>-</td>
</tr>
<tr>
<td>Nuclear</td>
<td>-</td>
<td>4-5 GW installed capacity</td>
<td>4% of installed capacity</td>
<td>-</td>
</tr>
<tr>
<td>Energy Efficiency</td>
<td>Consumption reduced by 8%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 3: Integrated Sustainable Energy Plan targets

In the interests of promoting the integration of renewable energies, beyond defining strategical mid- and long-term targets, several measures have been taken over the years to adapt the policies and regulations framework in force and redesign the role of the sector governance players. Table 4 synthetizes the evolution of laws, policies and regulations that have been produced in Egypt.

Table 4: Policies and regulations supporting RE investments in Egypt

Source: Source: IRENA (2018); MOP (2015); MOERE (2015); NREA (2016); IRENA (2014); EgyptERA (2014); GAFI (2017); Presidential Decree (2015); IEA (2018).

1986
Law N° 102 of 1986
Establishment of the New and Renewable Energy Authority, NREA, with the role of promoting and developing renewable energy in Egypt.

2008
New National Renewable Energy Strategy
Target to generate 20% of the country electricity from renewable sources by 2020, 12% by wind, 6% by hydro, 2% by solar energy. Establishment of competitive bidding mechanism for build-own-operate (BOO) contracts.

2012
Egyptian Solar Plan
Target to install around 3.5 Gw of solar power plants by 2027 (2800 Mw CSP + 700 Mw PV).

2013
Integrated Sustainable Energy Strategy (ISES)
Renewable energy targets: 20% by 2022, 42% in 2035
Fossil fuels targets: oil and gas 45% of total primary energy supply and coal 15% by 2030
Nuclear: install 4-5 Gw by 2025
Energy efficiency targets: reduce consumptions by 8% by 2022
Foster liberalisation and competition in the market
Improvement of institutions role (EEHC, EGPC)
Increase of financial transparency and public accountability

2014
First round of Feed-in-Tariff Cabinet Decree N° 1947 of 2014
Introduction of FIT for RE projects, with the purpose of a fixed energy price for 25 years for solar and 20 years for wind projects.

Law 203 of 2014 - Renewable Energy Law
Promotion of private renewable energy projects, including competitive bids, feed-in tariff, independent power production through third party access and allocate the lands.

2015
Prime Ministerial Decree N° 374/15/14 of 2015
Regulations for availing land for RE projects.
Egypt renewable energy tax incentives (Amendment to Investment Law of 1997)
Incentives include trimming sales tax to 5% from as high as 10%, and setting customs duties on equipment used for production at 2%.
and setting customs duties on equipment used for production at 2%.

New Electricity Law N° 87 of 2015
Liberalisation and decoupling of generation and distribution of electricity by allowing the introduction of private companies, establishing the rules for a competitive market.
EEHC becomes independent, in charge of the grid operation, with the obligation to allow third parties to use the grid with equal opportunities.
EgyptERA is officially separated from MOERE, responsible for energy policies development and procedures, setting tariffs and prevent monopolism threatens.
Available codes for licensing.

2016
Second round of Feed-in-Tariff Prime Ministerial Decree N° 2532 of 2016
New set of tariffs, duration of the incentive and new mechanism policy.
Regulations to avail land for RE projects.
Presidential Decree N° 116/2016
Allocates around 7600 km² of land to NREA with the purpose of implementing renewable energy project.

2017
Investment Law N° 72 of 2017
Facilitation of investments and international funding in Egypt.
Investments guarantees and several alternatives to amicably settle disputes relating to investment contracts.
Periodical Decree N° 3/2017
Net metering scheme for PV projects up to 20 Mw
In line with this strategy, it has been necessary to redesign the governance of the Egyptian electricity sector, conceiving new dedicated entities and promoting the transparency and independency of the existing ones. The current institutional framework of the energy sector is described in the Table 5.

<table>
<thead>
<tr>
<th>Institutional Entity</th>
<th>Name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supreme Council of Energy</td>
<td>SEC</td>
<td>Supervision energy policies and national strategies, regulation of energy prices and incentive reforms. It is composed the Prime Minister and all relevant ministries.</td>
</tr>
<tr>
<td>Ministry of Petroleum and Mineral Resources</td>
<td>EGPC, EGAS, GANOPE</td>
<td>Energy Ministries</td>
</tr>
<tr>
<td>Ministry of Electricity and Renewable Energy</td>
<td>MOERE</td>
<td>In compliance with Law N° 87 of 2015, EgyptERA monitors the whole energy sector (production, transmission and distribution), implements policies, sets tariffs and administers licences.</td>
</tr>
<tr>
<td>Authority of Regulation</td>
<td>EgyptERA</td>
<td>In compliance with Law No. 102 of the year 1986, NREA plays both as a regulator and a project developer. It is the state agency focused on expanding renewable energies, independent form EEHC, reports only to MOERE and EgyptERA.</td>
</tr>
<tr>
<td>New and Renewable Energy Authority</td>
<td>NREA</td>
<td>Started as the state-owned entity under monopoly regime, now after the unbundling owns 90% of production capacity and all the transmission and distribution companies.</td>
</tr>
<tr>
<td>Egyptian Electricity Holding Company</td>
<td>EEHC</td>
<td></td>
</tr>
</tbody>
</table>

Table 5: Institutional framework of the energy sector
Source: IRENA (2018), PwC (2016)\(^{10}\)

The entire sector is regulated by **EgyptERA**, the designed authority, responsible for implementing the laws, guarantying the transparency, preventing market monopoly and managing in details tariffs and licences. **NREA** plays as both regulator and project developer, established on the purpose of expanding renewables in the country.

The entire grid, in particular the generation, transmission and distribution of the electric service is managed by **EEHC**, the Egyptian Electricity Holding Company. Historically, the electricity market was a monopoly under the state-owned Egyptian Electricity Authority, **EEA** now known as **EEHC**. With the New Electricity Law N° 87 of 2015 Egypt has started the process of market liberalisation, allowing the entry of private companies in the generation and distribution and redefining the role of **EEHC** as a supervisor and coordinator of all the players along the electricity service value chain (from producers to consumers)\(^{21}\). Nevertheless, to date, **EEHC** controls the 90% of the generation capacity (6 companies), the monopoly of transition and all the utilities responsible for the distribution (9 companies). A scheme of the **EEHC** organisation structure is outlined in the Figure 4.

**Figure 4: EEHC Organization structure**
Source: **EEHC** (2018)\(^{22}\)

However, further improvements are required to effectively promote the integration of RES and more broadly to increase the competitiveness of the market, financial transparency and public accountability, as it is sustained by the Minister Electricity and Renewable Energy in “Addressing Egypt’s Electricity Vision”\(^{23}\).

Within the policies and regulatory framework Egypt defined a range of measures for incentivising the growth of renewable energy market. A list of the existing incentives is presented in Table 6.

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Further supporting schemes that are currently active in Egypt will be analysed in the next chapter.

3. Procurement and supporting schemes

Today, an investor in renewable energy can have at his disposal a variety of procurements and supporting schemes put in place by the Egyptian government, illustrated in Figure 5.

Table 6: Renewable energy incentives
Source: IRENA (2018)

Further supporting schemes that are currently active in Egypt will be analysed in the next chapter.

### Table 6: Renewable energy incentives

<table>
<thead>
<tr>
<th>Incentive</th>
<th>Key elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority of dispatchment</td>
<td>Transmission and distribution utilities under EEHC announced priority of dispatchment for electricity form renewable energies.</td>
</tr>
<tr>
<td>Tax relief</td>
<td>A tax reduction has been applied on components and spare parts of projects, from 5% to 2% (not just spare parts and components, but also all imported machinery, equipment and devices that are required to set up the company), with a VAT rate reduced from 14% to 5%. A 30% of discount on project investment costs, according to Art. 11 of Law No. 72/2017.</td>
</tr>
<tr>
<td>Land allocation</td>
<td>Through the Prime Minister Decree N° 37/4/15/14 of 2015 an area of more than 7600 km² in the Gulf of Suez, east and west of the Nile, Benban and Kom Ombo regions, has been allocated for the implementation of RE projects. The 25% of the land has been assigned for PV plants and the rest for wind turbines. The current land use agreement entails a payment of at least 2% of the investor’s annual revenue from energy production. State owned land shall be allocated for the purpose of creating the investment project, pursuant to Art. 47 of the Executive Regulations of the Law No. 72/2017.</td>
</tr>
</tbody>
</table>

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4 http://auptde.org/Article_Files/Egypt.pdf
All these forms of contract are fundamental to establish a clear partnership between private and public sector, guarantying transparent agreements and laying the fundamentals for mitigating investments risks. A brief description and the historical application of these schemes are the focus of this chapter.

**Auctions**

The auction is a competitive and transparent bidding, managed by the public sector, through which it is designated the company that will be licensed to develop the project launched by the government and supported by different types of financing methods. To date more than 70 countries have adopted this instrument\(^2^5\), gaining a discrete success over the years, mainly because, if well-designed, it has proved to identify the “real” and record-breaking price of energy.

Historically, the competitive bidding procedure was introduced in Egypt for the first time in 1990s from NREA. The first round of auctions for private large-scale projects dates back to November 2009\(^2^6\) and many tenders have been launched the later years. Today, the EETC is seeking to redefine the auctions for solar and wind power plants, with the support of the European Bank for Reconstruction and Development (EBRD)\(^2^8\). Today, the policy is designed to provide bid winners with either EPC or BOO contracts to limit the perceived investment risks.

**EPC - Engineering Procurement and Construction contract**

The EPC is the form of contracting that assigns to third parties - the EPC contractors - the realisation of different project phases, from the design to the construction of the power plant. The procurement scheme entails a variety of clauses, in terms of price, completion date, performance and more, that, if well specified, can substantially cover the upfront investment risks perceived by lenders. Moreover, this procurement is essential in case the government or the funding entity don’t have the required engineering expertise to develop a renewable energy project.

**BOO - Build-Own-Operate contract**

The Build-Own-Operate (BOO) contract is a particular form of project financing that consists in a public-private partnership where the private company builds, owns and operates the power plant independently from the government, under specified agreement and time conditions stated in the concession. In August 2015 EETC announced a call for five projects within this mechanism, while NREA was responsible for the land provision.

**IPP - Independent Power Producers**

The Independent Power Producers (IPPs) is a procurement scheme that enables independent private companies that own and operate power plants to sell the produced electricity to either end-users or distribution utilities, according to the project size. In case there is a surplus of electricity production, it can be consumed to meet the producers needs. This mechanism doesn’t consist in a financing instrument, since producers repay their costs through the sale of electricity, but in a form of guarantee for the owners. The introduction of IPPs is crucial in case the public sector doesn’t have the necessary financial means for investing in expanding the power installed capacity. In Egypt, the IPPs scheme for renewable energy projects was introduced in 2015. EgyptERA is responsible for defining the terms of the contract to provide developers with the necessary mitigation risks level.

\(^2^5\) IRENA (2018)  
**FiT - Feed in Tariffs**

The Feed-in-Tariff (FiT) is an economic incentive, designed on cost-based purchase prices of electricity (USD/kWh), to accelerate investments in renewable energy markets. Through this mechanism producers are provided with a long-term contract (typically of 15 to 25 years) that ensures the guarantee of grid access and a certain electricity sale price, depending on the project size and technologies involved.

The FiT mechanism was introduced for the first time in Egypt with the Prime Minister Decree N°1947 in 2014, in the aim of meeting the target of 2300 Mw of PV and 2000 Mw of wind installed capacity. The first round of FiT, designed for PV and wind projects under 50 Mw\(^{29}\), befitted from a great political support and a successful foreign investment. The government selected two main locations, one for wind in Zafarana (Red Sea Governorate) and one for PV in Benban (Aswan Governorate), in which developers could choose their own plot of land (first come first served criterion), sharing the cost of common infrastructures (roads, substations and transmission lines) with the other investors. Although 57 projects qualified for PV (totalising 2.8 Gw) and 27 projects for wind (totalising 1.8 Gw), only two developers of large-scale PV plants were able to sign the contract.

The tariffs set in the I Round of FiT are outlined in Table 7.

<table>
<thead>
<tr>
<th>PV SYSTEMS</th>
<th>Capacity</th>
<th>USD cents/kWh</th>
<th>Yearly operational hours</th>
<th>USD cents/kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 kW - 20 Mw</td>
<td>13.60</td>
<td>2500 - 3000</td>
<td>11.48</td>
<td></td>
</tr>
<tr>
<td>20 Mw - 50 Mw</td>
<td>14.33</td>
<td>3000 - 4000</td>
<td>9.57</td>
<td></td>
</tr>
</tbody>
</table>

**Table 7: I Round FiT scheme**

Source: IEA Policies and measures database

---

As a consequence of the depreciation of the Egyptian pound a second round of FiT was announced and established in the Prime Minister’s Decree No. 2532 of September 2016, completely changing the scenario for the investors. For PV small-scale projects the tariffs have been increased, while for solar plants over 20 MW the electricity sale price decreased from US dollar cents 14.33 to 8.4 per kWh due to a fall in technology costs. The new FiT for wind systems decreased, especially for large-scales power plants which suffered from a halved price.

The tariffs set in the II Round of FiT are outlined in Table 8.

### Table 8: II Round FiT scheme

Source: The Economist (2016)\(^{10}\), IEA Policies and measures database

* For wind: for the first 5 years the tariff refers to the I round FiT scheme and for the last 15 years it refers to the II round FiT scheme

The investors of the first phase of FiT have been permitted either to pursue with their investment, in the respects of the new financing clause, to accept the new tariffs of the second FiT phase, or to stop the project development and get back all the expenses incurred without any deduction.

An additional element that contributed to change the scenario for investors was the clause on the tariff payment, described in Table 9.

### Table 9: II Round FiT tariff payment scheme

After this second phase, 30 PV projects have passed the qualifications (totalising 1465 MW), of which 10 have already closed the PPA agreements (25 years) with EETC and land agreement with the NREA. To date, through this mechanism Egypt was able to support the installation of 1.7 Mw of solar renewable energy, potentially 12.4 MW with this second round, which is still far from the strategic RE target set at 4300 MW. Nevertheless, there is a large consensus that the Feed-in-Tariff incentive will be soon replaced by the auctions\textsuperscript{31,32}, as a consequence of a more attractive price creation mechanism offered by the competitive bidding.

**Net Metering**

This mechanism is an economic incentive that aims to promote the self-consumption of distributed generated energy by a monetary compensation based on the production (USD/kWh). The producers are connected to the grid and can sell the surplus of energy to the local utility, according to the country policy. This system has demonstrated to foster the diffusion of distributed generating plants from renewable sources, usually of medium- and small-scale size.

In Egypt, the net metering has been approved and introduced in January 2013\textsuperscript{33} with the Law N° 203 of 2014, only made possible for PV plants. However, the policy was not enough attractive to producers, since tariffs were lower than FiT ones, the whole scheme was not flexible and the second round of FiT appeared more appealing to investors\textsuperscript{34}. At the beginning of 2017, the regulation authority allowed the payment for energy surplus by net metering, and six months later the cap for qualification was increased from 500 kW to 20 MW. According to the Egyptian regulation the monthly energy surplus is considered a credit that producers can benefit from in the following months. At the end of the year if the producers are still on credit, the authority buys the electricity at the equivalent price of avoided production costs, based on the current state-owned generation mix. In the year 2017/2018 the price amounted to US dollars 0.040/kWh.


Egypt institutional counterparties within the regulatory framework

The current regulatory framework envisages the designated institutional counterparties for each type of contract, summarized in Table 10.

<table>
<thead>
<tr>
<th>Counterparty</th>
<th>EgyptERA</th>
<th>NREA</th>
<th>EEHC</th>
<th>Distribution companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auction</td>
<td>EPC</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>- Licences</td>
<td>- Proposes project</td>
<td>- RE dispatch priority</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Set project tariff</td>
<td>- Provides necessary documentation</td>
<td>- PPAs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Set transmission fees</td>
<td>- Prepares financing methods</td>
<td>- Grid connection agreement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BOO</td>
<td>- Qualification of construction tenders</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IPP</td>
<td>- Land allocation</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>FIT</td>
<td>&lt;200 kW</td>
<td>-</td>
<td>Technical and economic assessment</td>
<td>- Pay energy costs and services to producers</td>
</tr>
<tr>
<td></td>
<td>200-500 kW</td>
<td></td>
<td>- Pay energy costs to producers</td>
<td>- Grid connection</td>
</tr>
<tr>
<td></td>
<td>0.5-20 MW</td>
<td>Licenses</td>
<td>Qualification of construction tenders</td>
<td>- Grid connection</td>
</tr>
<tr>
<td></td>
<td>&gt;20 MW</td>
<td>Land allocation</td>
<td>Qualification of construction tenders</td>
<td>-</td>
</tr>
<tr>
<td>Net Metering</td>
<td>Market regulation</td>
<td>Qualification of process for service provider</td>
<td>- Pay energy costs to producers</td>
<td></td>
</tr>
<tr>
<td>Up to 20 MW</td>
<td></td>
<td></td>
<td>- Grid connection</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 10: Counterparties within the regulatory framework
Source: IRENA (2018)
Investments in renewable energies are exposed to a wide range of risks, related to the technological characteristics of the asset as well as to the general business framework of the market where the investment should take place. In precedent works, RES4MED defined five main risk-areas related to a RES project, namely:

- Risks related to the legal framework enabling RES investments
- Risks affecting the revenues side of RES investment
- Risks affecting the costs side of RES investment, both during construction and operation
- Risks affecting financial structuring of RES investment
- Risks related to environmental and social issues

Each of those areas is composed by a wide number of risks, listed in Table 1, showing the many challenges investors have to cope with when evaluating the opportunity to invest their money on a new renewable project.

<table>
<thead>
<tr>
<th>Area Subarea</th>
<th>#</th>
<th>Risk List</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business environment</td>
<td>1</td>
<td>Starting a business</td>
<td>Risk associated with the procedure to effectively start a new business in investing in RES plants (e.g. number of procedures, time and cost)</td>
</tr>
<tr>
<td>LEGAL FRAMEWORK ENABLING INVESTMENTS</td>
<td>2</td>
<td>Property/concession rights</td>
<td>Risk associated with obtaining and maintaining the rights of the property/concession throughout the lifecycle of the project</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Political risk</td>
<td>Risks associated with political events that adversely impact the value of investments (e.g. war, terrorism, civil disturbance, forced abandonment, nationalization, political unrest, breach of contract, expropriation &amp; confiscation, political violence, sabotage, strikes, riots, malicious damage, coup d’etat, civil war, rebellion)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Dispute resolution issues</td>
<td>Risk associated with entering a dispute and the capacity to solve it</td>
</tr>
<tr>
<td>Regulatory framework</td>
<td>5</td>
<td>Regulatory and Policy Risks</td>
<td>Risks associated with changes in legal or regulatory policies that have significant and adverse impacts on project development or implementation (e.g. incentive programs, interconnection regulations, permitting processes)</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Rules favoring market opening to IPP</td>
<td>Risk associated with the existing rules favoring IPPs in entering and operating in the market</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Grid access rules</td>
<td>Risks associated with the grid integration capability, reliability and rules to intake the produced power and allow grid integration procedures</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Institutional actors’ roles and responsibilities</td>
<td>Risk associated with definition of roles and the correct allocation of responsibilities of institutional actors involved in the project</td>
</tr>
<tr>
<td>RISKS AFFECTING REVENUES</td>
<td>9</td>
<td>Revenue stability</td>
<td>Risks associated with any factor that could affect the revenue stream</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Risk of curtailment</td>
<td>Risks associated with the curtailment of energy supply (e.g. supply chain disruption)</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Exchange rate risks</td>
<td>Risks associated with the volatility of foreign exchange rates that adversely impact the value of investments and arises when there is a currency mismatch between assets (revenues) and liabilities (debt financing)</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Counterparty/Sovereign risk</td>
<td>Risk associated with the credit and default risk by a counterparty in a financial transaction when does not cover its obligations (e.g. temporary inability, unwillingness to pay, insolvency, protracted default, bankruptcy). Both private and public counterparties are included in this category. Sovereign risk referring to the government as the counterparty</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Capital transfer and convertibility</td>
<td>Risk associated with an investor’s inability to legally convert local currency (capital, interest, principal, profits, royalties, and other remittances) into foreign exchange and/or to transfer local currency or foreign exchange outside the country where such a situation results from a government action or failure to act</td>
</tr>
</tbody>
</table>

Table 11 - Description of the main risks related to RE investments
Source: RES4MED and PwC (2016)36

In 2016, RES4MED conducted a survey36 among 4 different North-African countries (Morocco, Tunisia, Egypt and Jordan) to screen potential RES investors risk perception related to legal, regulatory, economic, financial and environmental/social framework. The survey involved actors from the financial, the industrial and the professional branches gathering the viewpoints of the whole renewable sector value chain.

The results showed that, in 2016, the perception of the overall investment risks in Egypt tended to be medium-high. From the Figure 6, that illustrates the average level of risk precepted in the 5 areas mentioned above portrayed by the study, it emerges that the highest ones are:

- Risks affecting project revenues, as for revenue stability and counterparty/sovereign risks
- Risks affecting financial structuring of projects, as for long/short term financial availability risk, interest rate risk, foreign exchange risk, tax regime risks, inflation risks

36 RES4MED and PwC, "Survey on the main barriers affecting investments in RE capacity in the Mediterranean Focus on Southern and Eastern Mediterranean Countries (SEMCs)", RES4MED, 2016
Since 2016, the Government of Egypt has undertaken a wide reform program, targeting some of the above-mentioned risks. This chapter will focus on the analysis of those risks, assessing how they impact on financing structure of a new RE project, and the effectiveness of the mitigation strategies implemented in enhancing investors’ attractiveness towards Egypt renewable sector.

1. Project finance risks and the bankability issue

In the light of what emerged from the conducted survey about electricity Egyptian market, the following section gives a definition of the aforementioned risks and possible strategies mitigate their effects

Counterparty risk

One of the main issues to be considered when presenting a project for financing is the analysis of creditworthiness of the off-taker (counterparty) of the power purchase agreement (PPA). To ensure the best financing conditions minimizing financial risks and reducing financial cost, it is fundamental that the counterparty has a good credit quality (credit rating), normally measured.

A good counterparty financial health ensures the possibility of giving the necessary guarantees, in terms of payment delays, termination clauses etc, requested either by the financing institutions or by the energy producers.

It is possible that the counterparty is lacking or having an insufficient official rating. In this case, it is necessary to provide the proper guarantees, being possibly issued by state institutions, assuring the risk mitigation in case of an unexpected change in counterparty’s solvency.

**Financing availability**

The risk of financial availability refers to the difficulty for an investor to find additional funds in the country to finance the project in the short, medium or long term. Limited availability of capital results in less favourable lending terms, such as high cost, short tenor and variable rates, along with corporate guarantees from the equity sponsors of the project. This risk is determined by a combination of different aspects/cause: lack of knowledge about RE business opportunities, lack of private investments, currency conversion and limited available liquidity.

The limited availability of local project finance for renewable projects is mainly due to the lack of knowledge of the RES sector in the country. Difficulties in identifying and assessing risks, and difficulties in predicting profits, may lead financial institutions to refuse to provide loans for projects in the sector, hampering its development, especially in countries where RES are at first implementation phase.

In order to improve the access to affordable capital, the development of financing institutions (DFIs) may facilitate the provision of loans for renewable energy projects in developing countries. DFIs aim to leverage private investment for projects that are close to commercial viability, have large potential developmental impacts, but are in sectors or countries where commercial banks are reluctant to invest due to perceptions of excessive risk. By investing their own resources, DFIs seek to mitigate these risks and give private investors the confidence to invest.

A number of instruments can be adopted to limit financing availability risk: investment (loans and equity), risk mitigation (for example loan guarantees), advisory services (to governments), and project preparation and development services. Given the nature of RE projects, the investors prefer having long-term financing scheme through DFIs.

The right government policies could help encourage more long-term investment in productive activities, but these activities should be managed in a way that mitigates the need for additional financing sources, as there is no guarantee that a shortage of liquidity can be compensated by drawing new debt during the lifecycle of the investment. A shortage of liquidity can happen for bad management or, likely, for low counterparty creditworthiness reasons.

Moreover, in emerging countries, there is a real possibility that revenues denominated in local currency cannot be converted into the functional currency, having convertibility complications. This issue could be faced by entering into commercial agreements providing revenues denominated or indexed in the functional currency. For the reasons mentioned above, one of the most significant financial risks is the liquidity risk, which is the risk that a company, while solvent, would not be able to discharge its obligations in a timely manner or would only be able to do so on unfavourable terms owing to situations of tension or systemic crises (credit crunches, sovereign debt crises, etc.) or changes in the perception of company riskiness by the market. The risk management policies should be designed to maintain a level of liquidity sufficient to meet the obligations over a specified time horizon without having recourse to additional sources of financing as well as to maintain a prudential liquidity buffer sufficient to meet unexpected obligations. In addition, in order to ensure the discharge of its medium and long-term commitments, the company should pursue a borrowing strategy that provides for a diversified structure of financing sources to which it can turn and a balanced maturity profile.
Interest rate risk
The main source of exposure to interest rate risk is the variability of financial terms, in case of new debt, or the fluctuation in the interest flows associated with floating-rate debt. Investors can mitigate interest rate risk through financial contracts like forward contracts, interest rate swaps and futures.

Forward contracts are agreements between two parties with one party paying the other to lock in an interest rate for an extended period of time. This is a prudent move when interest rates are favorable. Of course, an adverse effect is the company cannot take advantage of further declines in interest rates.

Interest rate swaps are agreements between two parties in which they agree to pay each other the difference between fixed interest rates and floating interest rates. Basically, one party takes on the interest rate risk and is compensated for doing so. Futures are similar to forward contracts and interest rate swaps, except there is an intermediary. This makes the arrangement more expensive but there is less chance of one party failing to meet obligations. This is the most liquid option for investors.

Exchange rate risk
Exchange rate risk is the chance of losing money due to an exchange rate fluctuation. It mainly concerns receivables, debts, loans denominated in foreign currency as well as the repatriation of profits.

Loans in foreign currency could appear more attractive given that seemingly cheaper, and, especially with long term fixed-rate, they have the potential to significantly reduce the cost of financing renewable energy investments. When financing a RE project by a foreign loan, the mismatch between the currency of debt obligations and the PPA price (or tariff revenue), normally denominated in local currency, exposes over time the investor to the risk of devaluation of the local currency over time. The devaluation could imply lower returns for the project and, more important, the reduction of investments in the country due to currency risk.

Moreover, there could be also other currency risk coming from the following activities:
- Cash flows in respect of dividend from foreign subsidiaries or the purchase or sale of equity investments
- Financial liabilities assumed by developing company or the individual subsidiaries denominated in currencies other than the currency of account or functional currency of the company holding the liability
- Financial assets/liabilities measured at fair value

It is necessary to use a currency hedge with a third-party provider to protect against currency risk. Hedging solutions, usually in form of financial derivatives on over the counter markets, can be limited in availability but also expensive in emerging countries, increasing the financial cost of debt and therefore offsetting the initial benefit coming from cheaper foreign loans.

Additionally, there are cases when counterparty risk and exchange rate risk interact in a way that can make the hedging transaction ineffective (wrong way risk): in case of a severe currency shock, due to economic, financial or political reasons, the whole financial system might be affected and local banks could face difficulties in meeting their obligations under the derivative contracts. Governments in emerging countries need to recognize the role that currency hedging mechanism could play in expanding renewable energy capacity and contribute to develop currency markets accordingly.
**Inflation risk**

Inflation risk (or Purchasing Power risk) is the chance that the value of the cash flows from an investment will change in the future because of changes in purchasing power due to inflation. In emerging Countries, inflation can be high and increasing, with a significant volatility, which in turn could drive the volatility of the returns. The most effective way of mitigating this risk is indexing the revenues to inflation.

**Tax regime risk**

Tax risk is the chance that the cash flows will suffer unforeseen tax consequences, such as additional tax payments, higher tax administration costs or lower deductibility of costs. Tax risk can arise from existing tax laws, from future changes in tax laws or from company practices. In emerging countries, the tax risk is often linked to a political instability (political risk). The basic principles of tax risk management are seeking to address potential issues as soon as possible and allocating the proper change in law clauses in the formulation of the PPAs.

Other risks, which are not directly related to project financing but still play a significant role in influencing money-lenders’ risk perception are:

**Execution and enforcement of contracts in the countries**

**Dispute resolution issues**

- Length of judicial process qualifying the time required to resolve a dispute, from the date the complainant initiated the lawsuit to the date of payment
- The quality of the judicial processes
- Availability to recourse to international arbitration

**The project bankability issue**

The “bankability” of a project is the term used by the banks in the evaluation process which determines if it must be financed or not: “A project is bankable if the risks associated with the construction phase (or pre-completion phase) and the operation phase (or post-completion phase) have been correctly distributed among the different actors, in one form and content which satisfied the lenders”[^39]. The risk evaluation is a key component for project bankability evaluation. “It is essential for a sponsor to clearly identify the risks, after duly considering the peculiarities of the country context (regulatory and political environment, foreign exchange volatility, transmission infrastructure, etc.), and to correctly allocating them in the contracts scheme in order to limit both lenders’ recourses and financing costs”[^40].

The best approach to mitigate risks is to share them among the parties who are the best-placed to efficiently handle them through a clear scheme of specific agreements. Thereby, since a good contracts framework is more effective in terms of risks mitigation than the power of a single contract, the lender examines not only the content but also the interaction scheme, illustrated in Figure 7.

[^40]: Ibid.
Risk-sharing agreements between parties are necessary in order to reduce over-exposure and clarify responsibilities of each involved party: the combination of contracts makes possible to mitigate most of the investment-related and market-related risks. The resulting risk matrix, shown in Figure 8, defines who is in charge to manage which project-related and market-related risks.

Figure 7 - Contracts framework of a RE project
Source: BonelliErede

Figure 8 - Risks sharing matrix of RES projects
Source: BonelliErede et all (2018)

Risk allocation is fundamental to reduce the project financing and the overall investment cost (operating, capital and financing costs), attracting the interest of investors.

Requiring significant upfront investments, a renewable energy project needs the mobilization at the national level of various sources of funding. Today, most of the new private RE investments, included in Egypt, are done through project finance, with 60-80% of the capital coming from financing institutions (i.e. IFIs, multilateral development banks, international and local commercial banks, institutional investors), in form of equity contribution or debt. Consequently, the investment costs are particularly exposed to any possible changes in the project financing conditions. In this regard, investors adjust their required return profiles on the financing structure of the project in line with their risk perception (i.e. corporate finance vs. project financing).

Thanks to the decrease in technology costs, the overall cost of electricity generation form a new renewable energy plant (the so called Levelized Cost of Energy, LCOE ) is mostly affected by the project-finance conditions. It has been estimated that in developing countries the share of financing costs on LCOE reaches 60%, against 40% of developed countries, as illustrated in Figure 9.

Figure 9 - Levelized Cost of Energy of a wind power plant (% of pre-tax)
Source: Pöyry elaboration on data from Waissbein O. et all, (2013)

Higher financial return requirements from money-lenders mean higher financing costs for the project sponsor. The result will be a higher cost of generation for the new renewable plant, which may hinder its competitiveness. In the African countries, the country-risk evaluations remain mostly negative due to:

- Political and macro-economic instability
- Unstable legislative and regulatory frameworks
- Weaknesses of local financial sector reducing the possibility to find easy access to local banks

Consequently, RE projects have to cope with the following trilemma: how to ensure project bankability of new RES investments while guaranteeing appropriate project profitability and in the meanwhile safeguarding its sustainability in the long-term?

Hence, proper mitigation measures, coupled with a strong policy and regulatory framework, are essential to attract debt and equity capital at scale and reduce the financial overall costs of renewable energy in order to satisfy the needs of all the involved project stakeholders, from money-lenders to the final energy offtakers/consumers.

2. *Assessing the impact of financing risks of RE project in Egypt*

Since 2016, the Government of Egypt has demonstrated its political will in addressing most of the barriers spotted by renewable investors, intervening both on the stability of the renewable regulatory framework and on the macro-economic side. Nevertheless, the macro-economic situation of Egypt in the last years could explain past investors’ concerns about the exposure to unfavorable financing conditions of investment in renewable energy projects in the country. Indeed, from 2011 to 2016 Egypt has suffered from:

- Rising Central Bank interest rate, as illustrated in Figure 10
- Restrictions on currency convertibility, shown in Figure 11, with consequent difficulties for investors in finding hard currency for business purposes (such as importing inputs and repatriating profits)
- High volatile inflation rates, as illustrated in Figure 12

![Figure 10 - Evolution of Egypt interest rate from 1998 to 2018 (%)](Image)

*Source: Trandingeconomics - Central Bank of Egypt*
From an investor perspective the unfavorable market conditions resulted in:

- **High interest rates for financing from local banks** (ranging from 7% to a maximum of 15%), with consequent difficulties to ensure RES project competitiveness
- **Difficulty in hedging exchange rates variability**, with a risk of net value loss whether off-taking agreement price was denominated in local currency and debt in foreign currency
- **Uncertainty about real project revenues** whether off-taking agreement price was fixed and not indexed to inflation

As mentioned above, risks that cannot be properly assessed or allocated may result in a deterioration of the terms and conditions of the facility agreement, such as:

- More conservative debt to equity ratio
- Shorter tenor of the debt
- Need for a stand-by facility
- Higher arranging and commitment fees
- Stringent representation and covenant
Figure 13 gives an illustrative example on how unmanaged risks (in a pre-de-risking world) deteriorate the weighted average cost of capital (WACC) of a RE project in an emerging market, endangering its market competitiveness. A good combination of de-risking instruments and policies can mitigate those effects, safeguarding project bankability and competitiveness, and have to be considered as the real cornerstone of RES long-term sustainability.

![Figure 13 - Example of impact of risk categories on financing costs of RES (%)](source: Pöyry)

The next chapter will address the measures that the government has taken to address this issue and limit the investors’ perception level of financing risks.

3. **Egypt public mitigation framework of RE project finance risks**

Since 2016, the government of Egypt started a comprehensive economic reform program, backed by the International Monetary Fund (IMF), aimed to rebalance macro-economic conditions and achieve a more inclusive growth. The government has intervened deeply both on regulatory side as well as on the macro-economic situation to strengthen renewable sector attractiveness for private investors, by intervening on three levers:

- Public finance instruments and reforms
- Policy and regulatory instruments
- Public contractual guarantees

In this section there are described the main reforms that RES4MED believes are playing the biggest impact on the de-risking renewable energy projects in Egypt.
Reform of the policies and regulatory framework (see section 1.3)
The government has deeply reviewed the national procurement schemes available for new renewable
capacities, including the revision of the FiT mechanism and the implementation of the BOO tenders. Those
reforms tempted to solve the main concerns regarding off-taking contracts and security of project revenues,
confirming the political willingness to foster RE development in the country. Moreover, the New Electricity
Law introduced simplified dispute resolution mechanism between the different actors in the electricity
sector. In case of a dispute, a committee within EgyptERA shall be formed to settle such disputes. This
committee shall issue its decisions within 60 days of the application date. It should be noted that decisions
given by EgyptERA can be classified as administrative decisions, and are subject to the judicial review of the
State Council.

Introduction of the Egyptian Pound free floating and opening of the interbank currency trading
system
As a result of the liberalization of the exchange rate, the Egyptian Pound heavily devaluated from 7.8 vs
US dollar in Q3 2016 to 16 in Q4 2016 and 17.6 in 2018. The country experimented a big currency and
inflation crunch: the Consumer Price Index went from a 10.1% Year Over Year (YoY) in 2014 to 23.3% YoY
in 2016, reaching 31.9% in August 2017. However, currency depreciation boosted national manufacturing
competitiveness and strengthened exports as well as fiscal consolidation aspects. Moreover, the stabilization
of exchange rate improved business confidence with direct consequence on FDI’s volumes. Since then,
tighten monetary policy conducted by the Central Bank of Egypt to support the Egyptian pound and reduce
inflation are starting to show first results, with inflation expected to decline to 21.2% in 2017/18 and to
13.7% in 2018/19. The Central Bank of Egypt will continue to implement cautious monetary policy to reduce
the rate of inflation: the goal is to lower the rate of inflation up to 13% with a standard deviation of 3% in
the short term, and finally keep it to one-digit figure over the mid-term.

Reorientation of the Central Bank of Egypt (CBE) mandate towards an increased attention to
inflation rate evolution
According to IMF “the CBE plans to adopt a forward-looking and interest rate-based monetary policy
framework, with inflation as the nominal anchor”43. Egyptian authorities seem to have undertaken a
comprehensive review of the Law of the Central Bank and the Banking System with support from IMF
technical advisors. The revised Central Bank Law should establish price stability as the primary objective of
monetary policy and strengthen the CBE’s institutional and operational autonomy.

of a Performance Criterion and for Modification of a Performance Criterion”
Consolidation of public fiscal policy by adopting a new VAT Law and phasing-out energy subsidies to reduce the wage bill

Improvement of the governance and investment landscape by adopting a new Investment Law (Law no. 72 of 2017)
The new Investment Law No. 72 of 2017 (IL-2017), and its executive regulations were issued on 28 October 2017, abolishing the former Investment Guarantees and Incetives Law (Law no 8 of 1997). Aiming to streamline bureaucracy and enhance Egypt’s business scenario, the main objectives of the IL-2017 are:

- Equality of opportunities for investors
- Public support to new enterprises and start-up entrepreneurs
- Protection of free competition and consumers’ rights and prevention of monopolistic practices
- Transparent principles of investment governance
- Stability of investment policies
- Easing investment procedures and facilitating doing business

In issuing the IL-2017 and the ER, Egypt has finally completed its overhaul of its legal investment framework. The Egyptian legislator has offered a set of tax and non-tax incentives to attract foreign direct investment and introduced several alternatives to amicably settle disputes relating to investment contracts with Egypt or any State companies or State authorities. The IL-2017 deals with a wide range of investment policy aspects, providing new incentives for investors and clarifying key aspects of investment governance process to ease processes and reduce the administrative burden. Table 12 provides some details on the main IL-2017 provisions.

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45 BonelliErede, Africa Team’s NewsLetters on Egypt Investment Law, December 2017
<table>
<thead>
<tr>
<th>AREAS OF INTERVENTION</th>
<th>INVESTMENT LAW PROVISIONS</th>
</tr>
</thead>
</table>
| **Investment Incentives** | IL-2017 deals with tax-related matters by defining:  
  > General incentives open to all investment projects (except free-zone projects) exempt:  
    - deeds of incorporation  
    - mortgages, credit facilities agreements of companies and establishments from stamp duty and authentication and notary fees;  
    - land registration deeds  
    - flat custom duty of 2% of the value of imported machinery, equipment and tools necessary for incorporation  
  > Special incentives in form of tax deduction of the investment cost (defined as the cost necessary to set up the investment, including equity and debts, invested in tangible and intangible assets) under the limit of 80% of the capital paid in at the start of operations. Two thresholds are defined:  
    - 50% of the investment costs if projects are located in areas most in need of development (defined in Investment Map)  
    - 30% of the investment costs if investment projects answer to predetermined categories (electricity production and distribution project entered in such category)  
  > Additional incentives are also available for projects entering in determined categories (which do not exclude RES projects), as for:  
    - the refunding of half the land value if industrial production begins within two years from the date of land delivery  
    - the allocation of free land for strategic activities (as defined by the law)  
  > Reforming the free-zones regime, around three types: entire city free-zone, public free-zones, private free-zones  |
| **Investment Guarantees** | L-2017 gives clarity to:  
  > Definition of investment-related terms, namely: investment, investor, investment project, funds.  
  > Fair and equitable treatment for all investments and investors, without any arbitrary or discriminatory procedures or decrees  
  > Prohibition of nationalisation of investment project and expropriation of investment project funds  
  > Limits to administrative authorities’ powers  
  > Currency transferability provisions:  
    - Possibility for investors to incorporate, establish, expand and fund an investment form abroad in foreign currency and without restrictions  
    - Possibility to collect, own, manage, use and alienate the profits of an investment project and transfer them abroad  
    - Allow of immediate transfers in foreign currency of funds connected to foreign investment and possibility to convert local currency into hard currency  
    - Possibility for foreign employees to transfer their earnings abroad, including in foreign currency  
  > Provisions on employment of foreigners  
  > Facilitation on importation and exportation for investment projects  
  > Allocation of real estate  |
| **Institutional actors’ roles and responsibilities** | > Redefinition of investment governance bodies competences and role, namely of:  
    - GAFI  
    - Supreme Council of Energy  
  > Creation of investors’ service units acting as “one-stop shops” within the GAFI  
  > Creation of Accreditation offices, authorised by the GAFI  
  > Redefinition and automatization of incorporation procedures  |
| **Dispute resolution issues** | > Establishment of three committees to govern the settlement of investment disputes:  
    - Appeals committees  
    - Ministerial committee for the resolution of investment disputes  
    - Ministerial committee for the settlement of investment disputes  
  > Opening to alternative dispute resolution mechanisms (e.g. arbitration, mediation)  
  > Possibility for parties to agree on any dispute settlement body, including institutional and ad-hoc international arbitration  |

Table 12 - Focus on the new Egypt Investment Law (Law No. 72 of 2017)  
Source: BonelliErede
The introduced reforms had positive effects on Egyptian economic growth, passing from around 4% per year in 2015/2016 and 2016/2017 to above 5% in 2017/2018 with a positive outlook for future. A positive trend has been mainly driven by the net exports, private and public consumptions trend and a strong increase in investments, also in foreign direct investment (FDIs).

Despite the big and remarkable effort of the Egyptian government in putting in place all the mitigation measures needed to reduce the risks of the investors in RES, from the RES4MED members perspective, there is still room for improvements as pointed out in the next chapter with the final remarks and recommendations.
Recommendations and Final remarks

As seen in the previous chapter, the reforms presented have introduced a wide range of financial instruments, regulations and guarantees to cover potential investors in renewables from the main market-related risks, as we see from Table 13.

<table>
<thead>
<tr>
<th>RISK AREAS</th>
<th>RISKS</th>
<th>MITIGANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk affecting revenues</td>
<td>Counterparty/Sovereign Risk</td>
<td>Sovereign Guarantees on energy off-takers</td>
</tr>
<tr>
<td></td>
<td>Capital transfer and convertibility</td>
<td>Currency free convertibility</td>
</tr>
<tr>
<td></td>
<td>Foreign exchange risk</td>
<td></td>
</tr>
<tr>
<td>Risk affecting financial structuring</td>
<td>Financial availability</td>
<td>Grant Finance (through DFIs)</td>
</tr>
<tr>
<td></td>
<td>Interest rate Risk</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tax Regime</td>
<td>Tax discount and exemptions</td>
</tr>
<tr>
<td></td>
<td>Inflation Risk</td>
<td></td>
</tr>
<tr>
<td>Legal framework enabling investments</td>
<td>Political Risk</td>
<td>Prohibition of nationalisation and expropriation</td>
</tr>
<tr>
<td></td>
<td>Dispute resolution issue</td>
<td>Fair and equitable treatment for all investors</td>
</tr>
<tr>
<td></td>
<td>Regulatory and policy Risk</td>
<td>Procedures of setting investment disputes</td>
</tr>
<tr>
<td></td>
<td>Institutional actors roles and responsibilities</td>
<td>Stability of capacity procurement rules</td>
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<td></td>
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<td>Transpareny on grid access and dispatching rules</td>
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<td></td>
<td></td>
<td>Land acquisition procedures</td>
</tr>
<tr>
<td>RISKS</td>
<td>Public finance and monetary reforms</td>
<td>MITIGANTS</td>
</tr>
<tr>
<td></td>
<td>Regulatory instruments</td>
<td>Contractual guarantees</td>
</tr>
<tr>
<td>Capital transfer and convertibility</td>
<td>+ Sovereign Guarantees on energy off-takers</td>
<td>+ Sovereign Guarantees on energy off-takers</td>
</tr>
<tr>
<td>Foreign exchange risk</td>
<td>+ Currency free convertibility</td>
<td>+ Currency transferability provision</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ Capital repatriation provision</td>
</tr>
<tr>
<td>Financial availability</td>
<td>+ Grant Finance (through DFIs)</td>
<td>+ Prices/tariffs indexed in international currencies</td>
</tr>
<tr>
<td>Tax Regime</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Inflation Risk</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Political Risk</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Dispute resolution issue</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Regulatory and policy Risk</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Institutional actors roles and responsibilities</td>
<td>+ Definition of Central Bank role and mandate</td>
<td>+ Definition of Investment-governance bodies</td>
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<td></td>
<td></td>
<td>+ One-stop shop for investors</td>
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<td></td>
<td></td>
<td>+ Simplified bureaucratic procedures (golden approval)</td>
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</table>

Table 13
Source: RES4MED, 2018

Most of the new facilitative instruments are at first implementation stage, as for the IL-2017 and new RE tender procedures, and potential challenges still remain in the time required to make them fully operative. Moreover, the macro-economic and monetary reforms will need more time to give the expected results and to demonstrate their effectiveness in mitigating market risks. Nevertheless, some risks still remain not covered by any mitigation instruments and for someone there is still room for improvement, as for:

- The stability of the monetary policy with the Central Bank still having the authority to set a fixed exchange rate and block currency transfer
- The necessity, in certain cases, to receive pre-approvals from the CBE for procuring foreign currencies and for repatriation of funds
- The unavailability, or the difficult access, to financial hedging products for interest rate, foreign exchange and inflation risks
Table 14 tries to give a preliminary assessment of the effectiveness of the available instruments in covering the highlighted risks. It has to be acknowledged that their weight and their mitigation impact is deeply related to the project context and the assessment can substantially change in relation with each investor’s real experience.

In the last years, Egypt has confirmed its willingness in expanding the national renewable energy market entering in a wide program reform: from the adaptation of the renewable sector policy and regulatory framework to the improvement of the general investment framework and the onset of a competitive framework for the procurement of new RE capacity.

Although a complex set of laws, regulations and policies has been implemented to facilitate the integration of RES in the national energy landscape, confirming the willingness of the country in expanding the national renewable energy market, the deployment of renewables in Egypt still entails various risks which potentially correspond to different barriers that investors have to tackle.

This means that Egypt has to move from the first stage of reforming the overall investment framework for renewable energy to the second phase of application and improvement of that framework.

The Country must continue on the way of implementing competitive rules for the development of RE capacities, fully switching to public auction procedures for new projects. Roles and responsibilities of market players and electricity sector ruling institutions should be clarified and adjusted to be fully consistent with the market opening. Power purchase agreements should be standardised to ensure transparency and stability to investors; their bankability has to be safeguarded by providing clarity and certainty on the power purchase pricing.
Regarding most specific risk-areas related to project finance, our assessment showed that public institutions should prioritize actions to increase the mitigations of the following risks:

- Currency convertibility and liquidity risks by improving rules for profit repatriation and ensuring their stability on the long term
- Inflation risk and interest change risk by easing the access for foreign investors to hedging products and fostering the development of a national derivatives market
- Exchange rate risk by establishing a more stable monetary policy from the CBE and encourage transactions in hard international currencies (e.g. US dollars, euros)

Moreover, specific recommendations could be outlined for the most relevant policies and supporting schemes currently in force in Egypt: the Investment Law, available contractual guarantees for PPAs, and bank facilities and security agreements.

**Investment Law**
From the perspective of RES4MED members the Investment Law N° 72 of the year 2017 was a discrete success in bettering Egypt investment climate, especially for foreign investors. Nevertheless, it emerged that some improvements are still possible, notably on the following aspects:

- To increase rules clarity and transparency (start-up procedures and/or time and/or costs)
- To eliminate informal payments
- To reduce start-up costs
- To introduce electronic application and payment systems
- To provide legal and administrative support to applicants
- To establish a follow up and complaints system

**Contractual guarantees - PPA contracts and offtake agreements**
The clarity and comprehensiveness of the contracts set is essential for the de-risking of RE investments, since they allow to allocate the risks among the different parties who are the best placed to manage them. Within the contracts framework, PPAs and offtake agreements play a crucial role. Notwithstanding the goodness of the current available PPAs in Egypt, some difficulties have emerged related to currency issues, for which experts formulated some possible mitigation measures:

- Enhance the easier convertibility between currencies
- Encourage a switch in PPAs off-take price in favour of international currencies
- Improve off-take price-setting mechanisms and off-take price adjustment rules
Bank facilities and security agreements
Finally, although this aspect is not only responsibility of public institutions, possible solutions to mitigate project finance related come from the strengthening of local financial sector and an increased utilisation of public finance instruments to lower RE investment country risk exposure. On this aspect, general recommendations will be:

- To enhance local short term credit banks capacity/instruments for supporting international investors
- To allow easier cross border financial flows to support short term financial needs
- To establish a provision of government guarantees to discount the country risk on the financial conditions To define more favorable conditions for long term financing
- To increase the availability of government financial resources to be committed to the field of RE
- To open capital markets to players active in short term credit